

NON-PUBLIC?: N  
ACCESSION #: 8806160199

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Fermi 2 PAGE: 1 of 4

DOCKET NUMBER: 05000341

TITLE: Main Steam Bypass Valves Close Due to A Faulty Relay  
EVENT DATE: 05/10/88 LER #: 88-021-01 REPORT DATE: 06/09/88

OPERATING MODE: 1 POWER LEVEL: 017

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: Joseph Pendergast, Licensing Engineer TELEPHONE #: 313-586-1682

COMPONENT FAILURE DESCRIPTION:

CAUSE: X SYSTEM: TA COMPONENT: RLY MANUFACTURER: XXXX  
REPORTABLE TO NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On May 10, 1988 the plant staff was conducting electrical  
overspeed surveillance testing on the main turbine generator  
while the unit was in power operation. During the test, both  
main steam bypass valves closed. At 2251 hours, a reactor  
protection system high pressure scram occurred.

The event was caused by a faulty relay which generated a  
deviation between the three channel signals acting on the  
bypass valve control modules.

The relay was replaced. A modification will be implemented  
to alter the comparator trip circuits to actuate at a  
prescribed level of deviation between input signals. The  
modification will be completed prior to the end of the first  
refueling outage.

(End of Abstract)

TEXT: PAGE: 2 of 4

#### Initial Plant Conditions:

Operational Condition: 1 (Power Operation)

Reactor Power: 17 percent

Reactor Pressure: 925 psig

Reactor Temperature: 530 degrees Fahrenheit

#### Description of the Event:

On May 10, 1988, the plant staff was conducting electrical overspeed surveillance testing on the main turbine generator (TA), while the unit was in power operation. During performance of the test, pressure system unhealthy and pressure system fault lights illuminated at the turbine control panel. Both east and west main steam bypass valves (JI) closed following the illumination of the fault lights. Approximately eighteen seconds later, at 2251 hours, a Reactor Protection System (JC) high pressure reactor scram occurred.

All safety systems functioned as designed during the reactor scram. Operations personnel took appropriate actions as directed by plant procedures. The unit was placed in the Shutdown condition. At 2256 hours, the reactor scram signal was reset.

#### Cause of the Event:

The event was initiated by a fault in the operation of the overspeed allow relay (RLY) RL3. The fault caused a deviation to occur between the three control signals for valve position demand in the triplicated channel system during overspeed testing. Channel to channel deviation is monitored in the turbine and bypass valve control modules.

During the overspeed testing, the bypass valve control modules received a trip signal from these deviation monitors. The bypass valves closed upon receipt of the trip signal.

The sensitivity of the error monitors in the turbine system is such that channel trip circuits actuate on a ten percent signal discrepancy. Bypass valve signal inputs are the difference between pressure error and turbine speed load signals. The scaling of the bypass system control loop is

such that a speed/load error signal is amplified by a factor of four when received at the bypass valve control modules.

TEXT: PAGE: 3 of 4

This causes bypass valve control module error monitors to be much more sensitive to a channel discrepancy condition than the equivalent turbine control channel monitors. Thus, a two and half percent signal discrepancy to the turbine control channel monitors will be seen as a ten percent signal discrepancy by the bypass valve control monitors which caused the valves to close. It should be noted that due to electrical tolerances, deviations up to four percent are normal.

#### Analysis of the Event:

Turbine overspeed testing is provided to assure that the turbine overspeed protection system instrumentation and the turbine speed control valves are operable and will protect the turbine from excessive overspeed. Two types of turbine overspeed testing are conducted, online and offline testing. At the time of this event offline testing was being conducted. The failed relay was contained within a test circuit used for offline testing only. Therefore this event would not happen when the main turbine generator is on line. The plant safety systems functioned as designed throughout the high pressure transient and subsequent reactor scram.

#### Corrective Actions:

The faulty relay was replaced. A modification will be implemented to alter the comparator trip circuits to actuate at an appropriate level deviation between input signals. Although the setpoint will be larger, in actuality the same ten percent error at the output of the governors/regulators will have to occur before the trip circuits are actuated. The minor modification will be completed prior to the end of the first refueling outage.

#### Previous Similar Events:

Licensee Event Report (LER) 87-008 describes an event where power to portions of the turbine control circuitry were lost while resetting an electrical governor trouble alarm. The main steam bypass valves closed and a high pressure reactor

scram resulted.

LER 85-066 describes an event where the gain setting used in the initial testing pick up was amplified and seen by the run-up module as part of the speed signal. The west main turbine bypass valve closed and a high pressure reactor scram resulted.

TEXT: PAGE: 4 of 4

Failed Component Data:

The manufacture of the failed relay is Varley model number VP4CAB34.

ATTACHMENT # 1 TO ANO # 8806160199 PAGE: 1 of 1

William S. Orser  
Vice President  
Nuclear Operations  
10CFR50.73  
Detroit Fermi 2  
Edison 6400 North Dixie Highway  
Newport, Michigan 48166 Nuclear  
(313) 586-5300 Operations

June 9, 1988  
NRC-88-0137

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Reference: Fermi 2  
NRC Docket No. 50-341  
Facility Operating License No. NPF-43

Subject: Licensee Event Report (LER) No. 88-021-00

Please find enclosed LER No. 88-021-00, dated June 9, 1988, for a reportable event that occurred on May 10, 1988. A copy of this LER is also being sent to the Regional Administrator, USNRC Region III.

If you have any questions, please contact Patricia Anthony at (313) 586-1617.

Sincerely,

/s/

Enclosure: NRC Forms 366, 366A

cc: A. B. Davis

J. R. Eckert

R. C. Knop

T. R. Quay

W. G. Rogers

Wayne County Emergency  
Management Division

\*\*\* END OF DOCUMENT \*\*\*

---